

This listing of claims will replace all prior versions and listings of claims in the application.

**Listing of Claims**

1. (currently amended) An isolated population of insulin-producing cells obtained from non-insulin-producing cells by a process comprising contacting the non-insulin-producing cells *in vitro* for at least twenty-four hours with an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of any one of the preceding GLP-1 peptides, and wherein the GLP-1 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

2. (canceled).

3. (canceled).

4. (canceled)

5. (currently amended) The population of claim 1, wherein the non-insulin-producing cells comprise pancreatic cells.

6. (currently amended) The population of claim 1, wherein the non-insulin-producing cells comprise pancreatic acinar cells.

7. (currently amended) The population of claim 1, wherein the non-insulin-producing cells comprise stem cells.

8. (currently amended) The population of claim 1, wherein the non-insulin-producing cells comprise pancreatic stem cells.
9. (currently amended) The population of claim 1, wherein the non-insulin-producing cells comprise mammalian cells.
10. (previously presented) The population of claim 9, wherein the mammalian cells comprise human cells.
11. (canceled)
12. (currently amended) An isolated population of insulin-producing cells obtained from non-insulin-producing cells by a process comprising contacting the non-insulin-producing cells *in vitro* for at least twenty-four hours with an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding Exendin-4 peptides, and wherein the Exendin-4 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.
13. (canceled)
14. (canceled)
15. (canceled)
16. (currently amended) The population of claim 12, wherein the non-insulin-producing cells comprise pancreatic cells.

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17. (currently amended) The population of claim 12, wherein the non-insulin-producing cells comprise pancreatic acinar cells.

18. (currently amended) The population of claim 12, wherein the non-insulin-producing cells comprise stem cells.

19. (currently amended) The population of claim 12, wherein the non-insulin-producing cells comprise pancreatic stem cells.

20. (currently amended) The population of claim 12, wherein the non-insulin-producing cells comprise mammalian cells.

21. (previously presented) The population of claim 20, wherein the mammalian cells comprise human cells.

22. (canceled)

23. (currently amended) A method of differentiating non-insulin-producing cells into insulin-producing cells in a subject in need thereof, comprising administering by one or more injections of a substance to the subject daily for at least three days an amount of the substance effective to induce differentiation of non-insulin-producing cells into insulin-producing cells ~~by contacting the non-insulin-producing cells for at least twenty-four hours with an amount of a substance effective to induce insulin production~~, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of any one of the preceding GLP-1 peptides, and wherein the GLP-1 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

24. (canceled)

25. (currently amended) ~~The method of claim 23, wherein~~ A method for differentiating non-insulin-producing cells into insulin-producing cells, comprising contacting the non-insulin-producing cells with the substance *in vitro* for at least twenty four hours with an amount of a substance effective to induce differentiation of non-insulin-producing cells into insulin-producing cells, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of any one of the preceding GLP-1 peptides, and wherein the GLP-1 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

26. (canceled)

27. (currently amended) A method of differentiating non-insulin-producing cells into insulin-producing cells in a subject in need thereof, comprising administering by one or more injections of a substance to the subject daily for at least two days an amount of the substance effective to induce differentiation of non-insulin-producing cells into insulin-producing cells ~~by contacting the non-insulin-producing cells for at least twenty four hours with an amount of a substance effective to induce insulin production~~, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding Exendin-4 peptides, and wherein the Exendin-4 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

28. (canceled)

29. (currently amended) ~~The method of claim 27, wherein~~ A method for differentiating non-insulin-producing cells into insulin-producing cells, comprising contacting the non-insulin-

producing cells ~~are contacted with the substance~~ in vitro for at least twenty four hours with an amount of a substance effective to induce differentiation of non-insulin-producing cells into insulin-producing cells, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than positions 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding Exendin-4 peptides, and wherein the Exendin-4 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

30. (canceled)

31. (currently amended) A method of enriching an isolated population of cells for insulin-producing cells, comprising contacting non-insulin-producing cells *in vitro* for at least twenty four hours with an amount of a substance effective to induce differentiation of non-insulin-producing cells into insulin-producing cells ~~insulin production~~, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, ~~an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than 1, 4, 6, 7 and 9 of Exendin-4,~~ and a fragments of any one of the preceding peptides, and wherein the peptide or fragments thereof ~~have~~ has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

32. (currently amended) A method of promoting pancreatic amylase-producing cells to produce insulin, comprising contacting the pancreatic amylase-producing cells in vitro for at least twenty-four hours with an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of any one of the preceding peptides, and wherein the GLP-1 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

33. (currently amended) A method of promoting pancreatic amylase-producing cells to produce insulin, comprising contacting the pancreatic amylase-producing cells in vitro for at least twenty-four hours with an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding peptides, and wherein the Exendin-4 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

34. (currently amended) A method of inducing insulin secretion in a subject in need thereof and lacking insulin-producing cells, comprising administering to the subject an amount of a substance effective to induce insulin production, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of any one of the preceding GLP-1 peptides, and wherein the GLP-1 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

35. (canceled)

36. (currently amended) A method of inducing insulin secretion in a subject in need thereof and lacking insulin-producing cells, comprising administering by one or more injections of a substance to the subject daily for at least two days an amount of a the substance effective to induce insulin production, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding Exendin-4 peptides, and wherein the Exendin-4 peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

37. (currently amended) The method of claim 36, wherein the ~~substance is administered by~~  
injections are multiple bolus injections ~~sufficient to maintain an effective amount of the~~  
~~substance.~~

38-52. (canceled)

53. (New) A method of enriching an isolated population of cells for insulin-producing cells, comprising contacting non-insulin-producing cells *in vitro* for at least twenty-four hours with an amount of a substance effective to induce differentiation of non-insulin-producing cells into insulin-producing cells, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding peptides, and wherein the peptide or fragment thereof has the ability to differentiate non-insulin-producing cells into insulin-producing cells.

54. (New) A method of promoting pancreatic amylase-producing cells to produce insulin in a subject in need thereof, comprising administering by one or more injections of a substance to the subject daily for at least three days an amount of the substance effective to induce differentiation of pancreatic amylase-producing cells into insulin-producing cells, wherein the substance is selected from the group consisting of a GLP-1 peptide, a GLP-1 peptide containing one or more conservative amino acid substitutions at positions other than positions 7, 10, 12, 13 and 15 of GLP-1, and a fragment of any one of the preceding peptides, and wherein the peptide or fragment thereof has the ability to differentiate pancreatic amylase-producing cells into insulin-producing cells.

55. (New) A method of promoting pancreatic amylase-producing cells to produce insulin in a subject in need thereof, comprising administering by one or more injections of a substance to the subject daily for at least two days an amount of the substance effective to induce differentiation

of pancreatic amylase-producing cells into insulin-producing cells, wherein the substance is selected from the group consisting of an Exendin-4 peptide, an Exendin-4 peptide containing one or more conservative amino acid substitutions at positions other than 1, 4, 6, 7 and 9 of Exendin-4, and a fragment of any one of the preceding peptides, and wherein the Exendin-4 peptide or fragment thereof has the ability to differentiate pancreatic amylase-producing cells into insulin-producing cells.

56. (New) The method of claim 34, wherein the administration is by one or more injections of the substance to the subject daily for at least three days.

57. (New) The method of claim 23, wherein the substance is administered for at least five days.

58. (New) The method of claim 34, wherein the substance is administered for at least five days.

59. (New) The method of claim 54, wherein the substance is administered for at least five days.

60. (New) The method of claim 27, wherein the substance is administered for at least five days.

61. (New) The method of claim 36, wherein the substance is administered for at least five days.

62. (New) The method of claim 55, wherein the substance is administered for at least five days.

63. (New) The method of claim 23, wherein the substance is administered subcutaneously, intramuscularly, intravenously or intraperitoneally.

64. (New) The method of claim 34, wherein the substance is administered subcutaneously, intramuscularly, intravenously or intraperitoneally.



65. (New) The method of claim 54, wherein the substance is administered subcutaneously, intramuscularly, intravenously or intraperitoneally.

66. (New) The method of claim 27, wherein the substance is administered subcutaneously, intramuscularly, intravenously or intraperitoneally.

67. (New) The method of claim 36, wherein the substance is administered subcutaneously, intramuscularly, intravenously or intraperitoneally.

68. (New) The method of claim 55, wherein the substance is administered subcutaneously, intramuscularly, intravenously or intraperitoneally.

69. (New) The method of claim 23, wherein the subject is diabetic.

70. (New) The method of claim 34, wherein the subject is diabetic.

71. (New) The method of claim 54, wherein the subject is diabetic.

72. (New) The method of claim 27, wherein the subject is diabetic.

73. (New) The method of claim 36, wherein the subject is diabetic.

74. (New) The method of claim 55, wherein the subject is diabetic.